

- Fig. 7. *Balanus porcatus*, abdominal view, just liberated from the ovum.
 — 8. *Clitia Strömia*, do. do. do.
 — 9. The same after the first moult; abdominal aspect.
 — 10. The same after the first moult; dorsal aspect.
 — 11. *Chthamalus depressus*, first form, abdominal view; 11 a, caudal extremity.
 — 12. The same after first moult; dorsal aspect.
 — 13. The same after first moult; abdominal view.
 — 14. The same, lateral view.
 — 15. *Balanus balanoides*: the pupa, or stage of the larva immediately previous to its becoming a fixed animal, in a state of activity.
 — 16. The same at rest.
 — 17. The same, viewed in front.
 — 18. The same, anterior member with sucker and hooks.
 — 19. The same, posterior natatory leg and caudal appendage.
 — 20. The same, soon after its becoming fixed.
 — 21. The same, do. seen from above.
 — 22. The same, a little older.
 — 23. a, Spermatozoa of *Balanus balanoides*.
 b, do. do. *Balanus perforatus*.
 c, do. do. *Clitia Strömia*.

XXVII.—*A Catalogue of British Spiders, including remarks on their Structure, Functions, Economy and Systematic Arrangement.* By JOHN BLACKWALL, F.L.S.

[Continued from p. 102.]

77. *Agelena celans*.

Agelena celans, Blackw. Linn. Trans. vol. xviii. p. 624.

Argus celans, Walck. Hist. Nat. des Insect. Apt. t. iv. p. 504.

This scarce species may occasionally be met with running upon the ground or concealed under stones in woods about Llanrwst. The palpal organs of the male are developed in August. Though intimately allied to the *Agelenæ*, yet M. Walckenaer has included this spider in the genus *Argus*.

GENUS *TEGENARIA*, Walck.

78. *Tegenaria domestica*.

Tegenaria domestica, Walck. Hist. Nat. des Insect. Apt. t. ii. p. 2. pl. 16. fig. 2; Koch, Die Arachn. B. viii. p. 25. tab. 260. fig. 607, 608; Blackw. Linn. Trans. vol. xix. p. 117.

— *petrensis*, Koch, Die Arachn. B. viii. p. 27. tab. 260. fig. 609.

Aranea domestica, Latr. Gen. Crust. et Insect. tom. i. p. 96.

Agelena domestica, Sund. Vet. Acad. Handl. 1831, p. 125.

Philoica domestica, Koch, Uebers. des Arachn. Syst. erstes Heft, p. 13.

I have received specimens of *Tegenaria domestica* from Cambridgeshire, Oxfordshire and Middlesex; but I have not ob-

served it in the north of England and Wales. It inhabits old buildings, spinning an extensive horizontal sheet of web in the angles formed by the transverse junction of their walls, and in various other situations: connected with the web, which, in addition to its lateral points of contact, is supported by numerous fine lines attached to both surfaces and to adjacent objects above and below it, is a short tube, usually situated in the angle formed by the walls, which being open at its extremities not only affords a retreat to the spider, but a ready medium of communication also with every part of its snare. The sexes pair in May, and in the two following months the female constructs several lenticular cocoons of white silk of a fine texture, measuring about $\frac{5}{8}$ ths of an inch in diameter, each of which contains from 130 to 150 spherical eggs of a yellowish white colour, not agglutinated together. All the cocoons are inclosed in separate sacs composed of compact white silk, having particles of plaster, whitewash, and other heterogeneous materials distributed upon their exterior surface.

The spider alluded to by Mr. Jesse in his 'Scenes and Tales of Country Life,' p. 339, as being peculiar to Hampton Court, and there named the "*Cardinal*," most probably is this species.

79. *Tegenaria atrica*.

Tegenaria atrica, Koch, Die Arachn. B. x. p. 105. tab. 353. fig. 825.
— *sæva*, Blackw. Ann. and Mag. Nat. Hist. vol. xiii. p. 179.

In the autumn of 1843 Miss Gertrude Buller Elphinstone obligingly transmitted to me from Middlesex living specimens of this fine species, which ranks among our largest indigenous spiders; they were captured at East Lodge, Enfield, where Miss Elphinstone then resided, and in reply to some inquiries relative to their habits, she informed me that they were found in dwelling-houses and conservatories. Subsequently I have received specimens from Miss Ellen Clayton, who obtained them at Oxford.

The superior spinners of this species, like those of *Agelena labyrinthica*, are triarticulate, and have the spinning-tubes disposed on the inferior surface of their elongated terminal joint; when thus modified, the principal purpose subserved by these organs appears to be the binding down with transverse lines, distributed by means of an extensive lateral motion, of the filaments emitted from the inferior and intermediate spinners, by which process a compact tissue is speedily fabricated. When in captivity, *Tegenaria atrica* constructs a horizontal sheet of web, with a short tube at one of the margins, serving it for a retreat.

As the tenth volume of 'Die Arachniden' did not come into

my possession until some months had elapsed after the publication of my description of this species in the 'Annals and Magazine of Natural History,' I was not aware that in announcing it as new to arachnologists I had been anticipated; however, such being the case, the specific name *atrica*, conferred upon it by M. Koch, must take precedence of that of *sæva*, which will follow as a synonym.

80. *Tegenaria civilis*.

Tegenaria civilis, Walck. Hist. Nat. des Insect. Apt. t. ii. p. 7. pl. 16.

fig. 1; Koch, Die Arachn. B. viii. p. 37. tab. 264. fig. 618, 619.

— *domestica*, Koch, Uebers. des Arachn. Syst. erstes Heft, p. 13.

Agelena civilis, Sund. Vet. Acad. Handl. 1831, p. 127.

Titulus 17, Lister, Hist. Animal. Angl. De Aran. p. 59. tab. 1. fig. 17.

The habits and œconomy of this common spider are very similar to those of *Tegenaria domestica*, for which it has frequently been mistaken, even naturalists of high authority having included references to Lister's description and figure of it among the synonyma of that species. During the summer and autumn the female constructs several lenticular cocoons of white silk of a fine texture, measuring about $\frac{3}{10}$ ths of an inch in diameter, in each of which she deposits from fifty to sixty spherical eggs of a yellowish white colour, not adherent among themselves; these cocoons are attached to walls, or other objects in the vicinity of her web, and have generally particles of plaster, whitewash, or mortar disposed on their exterior surface.

I have ascertained the following remarkable physiological facts in connexion with *Tegenaria civilis* by observation and experiment; namely, that both sexes change their integument nine times before they arrive at maturity, once in the cocoon and eight times after quitting it; that a leg of a young individual detached at the coxa six times consecutively may be reproduced at each succeeding change of integument after the infliction of the injury; that the life of this species extends through a period of four years; that the sexual organs of the male are connected with the digital joint of the palpi; and that the female, after impregnation, is capable of producing nine sets of prolific eggs in succession without renewing her intercourse with the male, more than two years elapsing before all are deposited, and ten months nearly intervening sometimes between the deposition of two consecutive sets.

Genus CÆLOTES, Blackw.

81. *Cælotes saxatilis*.

Cælotes saxatilis, Blackw. Linn. Trans. vol. xviii. p. 618. tab. 39.

fig. 6-8.

Clubiona saxatilis, Blackw. Lond. and Edinb. Phil. Mag. Third Series, vol. iii. p. 436.

Drassus saxatilis, Blackw. Research. in Zool. p. 332.

Aranea terrestris, Wider, Mus. Senck. B. i. p. 215. taf. 14. fig. 10.

Amaurobius terrestris, Koch, Die Arachn. B. vi. p. 45. tab. 192. fig. 463, 464.

— *subterraneus*, Koch, Uebers. des Arachn. Syst. erstes Heft, p. 15.

— *tigrinus*, Koch, Uebers. des Arachn. Syst. erstes Heft, p. 16.

A description of this interesting spider, which I discovered in the spring of 1826 beneath loose fragments of rock on Snowdon, in Caernarvonshire, was originally given in the 'London and Edinburgh Philosophical Magazine,' under the name of *Clubiona saxatilis*. An examination of specimens procured afterwards in various parts of North Wales, Lancashire and Yorkshire induced me to remove it to the genus *Drassus*, on account of the curvature of its maxillæ (Researches in Zoology). Subsequent investigations however, made with great care, have served to convince me that it appertains to the *Agelenidæ*, as it possesses several marked characteristics in common with the spiders of that family; for example, the anterior part of its cephalo-thorax is compressed; the superior spinners are triarticulate, are longer than the rest, and have the spinning-tubes disposed on the under side of the terminal joint; each inferior tarsal claw is provided with two pairs of fine teeth near the base; and its web is of a compact texture, having a tube in connexion with it extending, usually, to the extremity of a cylindrical cavity in the earth, which is frequently excavated by the animal itself. These facts do not appear to have received that degree of consideration from M. Walckenaer which their importance demands, as he still seems disposed to retain *Celotes saxatilis* in the genus *Clubiona* (Hist. Nat. des Insect. Apt. t. iv. pp. 441, 442). With regard to the genus *Amaurobius* of M. Koch, I may remark, that, as it includes spiders belonging to different families, which are easily distinguished by their organization, œconomy and habits, it must, as at present constituted, be rejected by systematic naturalists. The great defect of the genera attempted to be established by M. Koch is, that they are founded too exclusively on the disposition, form and relative size of the eyes; consequently, it sometimes happens that they comprise species in other respects decidedly incongruous.

Celotes saxatilis pairs in April, and in May the female deposits about 120 spherical eggs of a yellowish white colour, not agglutinated together, in a lenticular cocoon composed of white silk of a fine but compact texture, measuring half an inch in diameter; it is generally attached to the inferior surface of stones by a small covering of web, on the outer side of which particles of indurated soil are frequently distributed.

GENUS *TEXTRIX*, Sund.82. *Textrix lycosina*.

Textrix lycosina, Sund. Consp. Arachn. p. 19; Koch, Uebers. des Arachn. Syst. erstes Heft, p. 14; Die Arachn. B. viii. p. 46. tab. 266. fig. 623, 624.

— *agilis*, Blackw. Lond. and Edinb. Phil. Mag. Third Series, vol. iii. p. 109; Research. in Zool. p. 348. pl. 3. fig. 1, 2.

Agelena lycosina, Sund. Vet. Acad. Handl. 1831, p. 130.

Tegenaria lycosina, Walck. Hist. Nat. des Insect. Apt. t. ii. p. 15.

Titulus 20, Lister, Hist. Animal. Angl. De Aran. p. 67. tab. 1. fig. 20.

Professor Sundevall was the first who proposed to institute with this species the genus *Textrix*, which he defined in his 'Conspectus Arachnidum,' published in 1833; a like proposition, made by myself in the autumn of the same year, was announced in the 'London and Edinburgh Philosophical Magazine;' and it is a remarkable circumstance, as the Professor justly observes in a private communication of great interest with which he favoured me, "that we have applied the generic name *Textrix* to the same animal without knowing anything of the coincidence."

I gladly avail myself of this opportunity to acknowledge the obligation I am under to the Rev. Morgan Morgan, Rector of Conway, for his great kindness in obtaining for me, through the medium of his friends in Sweden, important information on the subject of arachnology most liberally imparted by Professor Sundevall.

Textrix lycosina, which has a relation of analogy with the *Lycosidæ* by the disposition and relative size of its eyes, is widely distributed in Great Britain, most commonly occupying crevices in rocks, stone walls, and the bark of old trees; its superior spinners are triarticulate, having the spinning-tubes arranged on the under side of the elongated terminal joint, and are employed in the fabrication of its snare, which consists of a sheet of web supported both above and below by fine lines intersecting one another at various angles, and attached to it and to adjacent objects by their extremities; a cylindrical tube in connexion with the snare usually extends to the spider's retreat. The sexes pair in June, and in the following month the female deposits between 50 and 60 spherical eggs of a pale yellow colour, not adherent among themselves, in a lenticular cocoon of white silk of a fine but compact texture, measuring $\frac{1}{4}$ th of an inch in diameter; it is attached to stones by a small covering of white web, on the exterior surface of which particles of soil and other materials are frequently distributed.

This spider, with a change of integument, is capable of reproducing the legs, palpi, and terminal joint of the superior spinners after they have been removed by amputation.

Family *Theridiidæ*.

Genus THERIDION, Walck.

83. *Theridion lineatum*.

Theridion lineatum, Walck. Hist. Nat. des Insect. Apt. t. ii. p. 285.

— *redimitum*, Latr. Gen. Crust. et Insect. tom. i. p. 97; Hahn,

Die Arachn. B. i. p. 86. tab. 21. fig. 65.

— *ovatum*, Sund. Vet. Acad. Handl. 1831, p. 113.

Theridium redimitum, Koch, Die Arachn. B. xii. p. 133. tab. 427.
fig. 1053–1055.

Steatoda redimita, Koch, Uebers. des Arachn. Syst. erstes Heft, p. 9.

Titulus 12, Lister, Hist. Animal. Angl. De Aran. p. 51.

This common spider, remarkable for its variation in colour, spins among coarse herbage and the stems of shrubs numerous fine glossy lines intersecting one another in different planes and at various angles, which constitute a snare similar in design to the toils constructed by the *Theridia* generally. It pairs in June, and in July the female deposits about 170 spherical eggs of a yellowish white colour, not agglutinated together, in a globular cocoon of bluish white, blue, or greenish blue silk of a looseish texture, measuring $\frac{1}{4}$ th of an inch in diameter. The cocoon is inclosed in a slight tissue of white silk connected with the inferior surface of the leaves of trees and shrubs, the edges of which are convolved about it and are retained in that position by silken lines. The young remain a long time in this nidus with the female and are supplied by her with food.

M. Koch, in transferring that variety of *Theridion lineatum* named *redimitum* to the genus *Steatoda* of Prof. Sundevall (Consp. Arachnidum, pp. 16, 17), lapsed into an inconsistency which M. Walckenaer has pointed out in his 'Hist. Nat. des Insect. Apt.' t. ii. p. 288, and which he himself has subsequently corrected.

84. *Theridion quadripunctatum*.

Theridion quadripunctatum, Walck. Hist. Nat. des Insect. Apt. t. ii.

p. 290; Hahn, Die Arachn. B. i. p. 78. tab. 20. fig. 58; Sund.

Vet. Acad. Handl. 1831, p. 118.

Steatoda quadripunctata, Sund. Consp. Arachn. p. 16, 17.

Eucharia bipunctata, Koch, Uebers. des Arachn. Syst. erstes Heft,
p. 7; Die Arachn. B. xii. p. 99. tab. 418. fig. 1027.

Phrurolithus ornatus, Koch, Die Arachn. B. vi. p. 114. t. 208. fig. 515.

Titulus 11, Lister, Hist. Animal. Angl. De Aran. p. 49. t. 1. fig. 11.

Crevices in walls and rocks, and interstices among stones are the haunts selected by this species, which occurs in many parts of England and Wales. It pairs in May, and in June the female constructs a globular cocoon of yellowish white silk of a loose texture, measuring $\frac{3}{20}$ ths of an inch in diameter; it is usually

attached to objects situated in the vicinity of her snare, and contains about 50 spherical eggs of a pinkish colour, not agglutinated together.

A female *Theridion quadripunctatum*, placed in a phial which was closely corked and locked up in a book-case, continued to exist without receiving any nutriment whatever from the 15th of October 1829 to the 30th of April 1831, when it died. That so voracious an animal should be capable of enduring abstinence from food for so long a period is certainly an extraordinary fact.

85. *Theridion sisymphum*.

Theridion sisymphum, Walck. Hist. Nat. des Insect. Apt. t. ii. p. 298; Latr. Gen. Crust. et Insect. tom. i. p. 97; Hahn, Die Arachn. B. ii. p. 47. tab. 58. fig. 132.

— *lunatum*, Sund. Vet. Acad. Handl. 1831, p. 111.

Theridium lunatum, Koch, Uebers. des Arachn. Syst. erstes Heft, p. 8; Die Arachn. B. viii. p. 74. tab. 273. fig. 645, and B. xii. p. 137. tab. 429. fig. 1060, 1061.

Steatoda lunata, Sund. Consp. Arachn. p. 16, 17.

Titulus 14, Lister, Hist. Animal. Angl. De Aran. p. 53. tab. 1. fig. 14.

Though I have never observed *Theridion sisymphum* in the open air, yet it is not uncommon in greenhouses, where it constructs an extensive complicated snare, somewhat of a pyramidal form, which consists of numerous fine glossy lines intersecting one another in different planes and at various angles. The sexes pair in June, and during the summer and autumn the female fabricates several balloon-shaped cocoons of different sizes, varying from $\frac{1}{2}$ th to $\frac{1}{3}$ rd of an inch in diameter, which she suspends in the upper part of her snare with their larger extremities downwards; they are composed of reddish brown silk of a fine but compact texture, and the largest of them sometimes comprises between 400 and 500 spherical eggs of a pale yellowish white colour, not adherent among themselves. Young spiders and cocoons containing eggs may frequently be seen in the snare at the same time.

86. *Theridion riparium*.

Theridion riparium, Blackw. Research. in Zool. p. 354.

— *saxatile*, Walck. Hist. Nat. des Insect. Apt. t. ii. p. 328.

Theridium saxatile, Koch, Uebers. des Arachn. Syst. erstes Heft, p. 8; Die Arachn. B. iv. p. 116. tab. 141. fig. 324, 325.

The œconomy of this species, which is evidently identical with the *Theridium saxatile* of M. Koch, is very remarkable. It spins under the projections of broken precipitous banks in the woods about Oakland a snare composed of fine glossy lines arranged after the manner of the *Theridia*. The union of the sexes takes

place in July, and in August the female fabricates a slender conical tube of silk of a very slight texture, measuring from one and a half to two and a half inches in length, and about half an inch in diameter at its lower extremity; it is closed above, open below, thickly covered externally with particles of indurated earth, small stones, and withered leaves and flowers, which are incorporated with it, and is suspended perpendicularly in the snare by lines attached to its sides and apex. In the upper part of this singular domicile the female constructs several globular cocoons of yellowish white silk of a slight texture, having a mean diameter of about $\frac{1}{8}$ th of an inch, in each of which she deposits from twenty to sixty small spherical eggs of a pale yellowish white colour, not agglutinated together. The young, after quitting the cocoons, remain a long time with the female and are provided by her with food, which consists chiefly of ants.

It would appear that M. Walckenaer, prior to the publication of the second volume of his 'Hist. Nat. des Insect. Apt.,' was not cognisant of my researches in this department of zoology, as in various instances he has adopted the names given by other arachnologists to spiders which I had previously described, without any reference to those assigned to them by me. I may refer to *Theridion riparium* as presenting a case in point.

PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY.

June 25, 1850.—Wm. Yarrell, Esq., Vice-President, in the Chair.

1. CATALOGUE OF THE MAMMALIA OF CEYLON. COLLECTED AND OBSERVED BY E. F. KELAART, M.D., F.L.S.

[Having already published a list of the Mammalia of the Island in our Number for May 1851, we merely give the descriptions of the new species indicated by the author.—ED. *Ann. Nat. Hist.*]

GOLUNDA NEWERA.

Fur soft, yellowish brown varied with black; chin and beneath yellowish grey; under-fur dark lead-colour; soft long hairs on the upper parts of the head and body, with longer black-tipped hairs having a subterminal yellowish band; fur of belly dark lead-colour tipped with yellowish grey; ears large, hairy on both sides, of a light rusty or ashy colour; whiskers slender, moderately long, some greyish, others blackish; tail shorter than the body, tapering to a point, scaly; upper surface of a black colour and covered with short semi-adpressed black hair; lower surface yellow or ashy colour, covered with short hair of the same yellow colour; feet having dark brown claws, purplish; four toes to the fore-feet, with a clawless rudimentary thumb; five hind-toes, three middle subequal; soles nearly bald, blackish; palma studded with four small tubercles; planta with six tubercles, the two foremost considerably larger; incisors yellow, superior ones